

**CLAIMS:**

1. A thermostatic safety valve for use with a liquid mixing valve, the thermostatic valve including an inlet for receiving liquid from the liquid mixing  
5 valve, an outlet, and a flow passage for liquid therebetween, a thermostatic element disposed in the flow passage and reactable to expand or contract relative to the temperature of liquid flowing past it, a shut off device which is movably positioned to restrict flow of liquid through the flow passage and which is movable with expansion or contraction of the thermostatic element, the  
10 thermostatic valve being operable to shift the shut off device to restrict flow of liquid through the outlet thereof when the temperature of liquid received through the inlet thereof exceeds a predetermined temperature.
2. A safety valve according to claim 1, said valve being elongate and  
15 defining said inlet and said outlet at opposite ends thereof.
3. A safety valve according to claim 1 or 2, said inlet being arranged for connection to an outlet of a liquid mixing valve.
- 20 4. A safety valve according to claim 3, said connection being a snap connection or a threaded connection.
5. A safety valve according to claim 3, said connection being an integral connection.  
25
6. A safety valve according to claim 2, said flow passage extending axially between said inlet and said outlet.
7. A safety valve according to any one of claims 1 to 6, said flow passage  
30 being circular in cross-section.
8. A safety valve according to claim 7, wherein the diameter of said flow passage changes through the length of the flow passage.

9. A safety valve according to any one of claims 1 to 8, said shut off device including a piston which is positioned in proximity of an opening of said flow passage, for movement toward and away from said opening.

5 10. A safety valve according to claim 9, said piston being arranged to closely approach said opening.

11. A safety valve according to claim 9, wherein said opening has a valve seat formed about it and said piston can move into engagement with said valve  
10 seat to close said opening.

12. A safety valve according to any one of claims 9 to 11, wherein said piston is generally cylindrical and includes a conical or frustoconical axial end portion in facing relationship with said opening.

15 13. A safety valve according to any one of claims 1 to 8, said shut off device including a piston which is circular in cross-section and is arranged for receipt within a circular opening formed in said flow passage, said circular opening having a slightly greater diameter than the external diameter of said piston so  
20 that said piston can enter said opening to restrict flow of water through said opening without fully closing said opening.

14. A safety valve according to claim 13, wherein said piston includes a frustoconical axial end portion in facing relationship with said opening.

25 15. A safety valve according to any one of claims 1 to 8, said shut off device including a piston which is positioned in proximity to an opening formed in said flow passage, said piston being arranged for movement across said opening to restrict flow of water through said opening.

30 16. A safety valve according to any one of claims 1 to 15, wherein when said shut off device has moved to substantially restrict flow of liquid through said outlet of said safety valve, said shut off device allows a small amount of liquid to continue to flow past said thermostatic element.

17. A safety valve according to any one of claims 1 to 8, wherein said shut off device includes a piston and biasing means to bias said piston to a position allowing generally unrestricted flow of liquid through said safety valve.

5

18. A safety valve according to any one of claims 1 to 8, wherein said shut off device includes a piston which is positioned so that flow of liquid through said flow passage acts on said piston in a direction tending to shift said piston to a position allowing generally unrestricted flow of liquid through said safety valve.

10

19. A safety valve according to any one of claims 1 to 8, wherein said shut off device includes a piston which is positioned so that flow of liquid through said flow passage acts on said piston in a first direction tending to shift said piston to a position to substantially restrict flow of liquid through said flow passage, and biasing means are provided to bias said piston in a second and reverse direction.

15

20. A safety valve according to claim 19, said biasing means being a coil spring mounted in compression to act on said piston.

20

21. A safety valve according to any one of claims 1 to 8, said thermostatic element including an outer casing, a thermally reactive material within said casing, and a plunger, the plunger being movable upon expansion or contraction of said thermally reactive material, said shut off device including a piston and said plunger being in engagement with said piston to shift said piston upon expansion or contraction of said thermally reactive material.

25

22. A safety valve according to claim 21, said engagement being fixed engagement.

30

23. A safety valve according to claim 21, said engagement being abutting engagement.

24. A safety valve according to any one of claims 21 to 23, said casing being fixed against movement within said flow passage.

25. A combined liquid mixing valve and thermostatic safety valve, said  
5 mixing valve including a first inlet for receiving heated water from a water heater, a second inlet for receiving water from a water supply, a mixing chamber for mixing water from said first and second inlets and an outlet for discharge of said mixed water, said safety valve including an inlet for receiving liquid from the liquid mixing valve, an outlet, and a flow passage for liquid  
10 therebetween, a thermostatic element disposed in the flow passage and reactable to expand or contract relative to the temperature of liquid flowing past it, a shut off device which is movably positioned to restrict flow of liquid through the flow passage and which is movable with expansion or contraction of the thermostatic element, the thermostatic valve being operable to shift the shut off  
15 device to restrict flow of liquid through the outlet thereof when the temperature of liquid received through the inlet thereof exceeds a predetermined temperature.

26. A combined liquid mixing valve and thermostatic safety valve according  
20 to claim 25, said mixing valve and said safety valve being formed integrally.

27. A combined liquid mixing valve and thermostatic safety valve according to claim 25 or 26, each of said mixing valve and said safety valve being elongate and defining an axial flow passage and said respective flow passages  
25 being axially aligned.

28. A water delivery system, including a water supply, a water heater, a liquid mixing valve and a thermostatic safety valve, said water heater including a tank having an inlet for receiving water from said water supply and an outlet  
30 for discharge of heated water, said mixing valve including a first inlet for receiving heated water from said water heater, a second inlet for receiving water from said water supply, a mixing chamber for mixing water from said first and second inlets and an outlet for discharge of said mixed water, said safety valve including an inlet for receiving liquid from the liquid mixing valve, an outlet,

and a flow passage for liquid therebetween, a thermostatic element disposed in the flow passage and reactable to expand or contract relative to the temperature of liquid flowing past it, a shut off device which is movably positioned to restrict flow of liquid through the flow passage and which is

5 movable with expansion or contraction of the thermostatic element, the thermostatic valve being operable to shift the shut off device to restrict flow of liquid through the outlet thereof when the temperature of liquid received through the inlet thereof exceeds a predetermined temperature.